

REMARKS

Claims 1-17 are pending in this application. By this Amendment, claims 1, 2, 13 and 14 are amended, and claims 14-17 are added. The amendments and added claims introduce no new matter because they are supported by at least the claims as previously filed, and paragraphs [0049]-[0082] of the specification. Reconsideration of the application based on the above amendments and the following remarks is respectfully requested.

The Office Action, in paragraph 2, rejects claims 1-3, 5, 6, 12 and 13 under 35 U.S.C. §102(b) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a), as being unpatentable over, U.S. Patent No. 6,495,805 to Sakamoto et al. (hereinafter "Sakamoto"). These rejections are respectfully traversed.

Sakamoto teaches a method to apply at least two films to a substrate, using test substrates to establish a film thickness and adjusting a temperature profile to obtain a desired film thickness (col. 3, line 51 - col. 4, line 7). The second temperature trajectory is established after measuring results from the first temperature trajectory (col. 4, lines 1-11, col. 6, lines 2-10 and lines 34-42). A model for estimating the wafer temperatures is stored in an estimating unit (col. 9, lines 50-55). The controlling unit derives heater control inputs from a look-up table (col. 10, lines 8-13). Measurement of film thickness of test wafers is used to generate a corrected temperature (col. 11, lines 25-32). A second set of test wafers is generated to test the adjusted temperature profile (col. 11, lines 20-28) and a subsequent new temperature profile is established to produce a final two film substrate (col. 12, lines 38-44).

The Office Action alleges that features of Sakamoto can reasonably be considered to correspond to the "predicted temperature" of the pending claims. This analysis of the Office Action fails for at least the following reasons.

Sakamoto uses a pre-determined temperature profile to fire test substrates and manually measures the resulting film thickness. This film thickness is entered into a look-up

table to establish a second temperature profile. The process of Sakamoto is an iterative approach predetermining a temperature trajectory in advance for generating required film thickness. Sakamoto does not teach any feature that can reasonably be considered to correspond to a dynamic substrate temperature prediction means. Sakamoto is adjusted based on measured film thickness results and temperatures are adjusted to alter this film thickness. Sakamoto does not use a control means to mix temperatures and establish a predicted temperature.

Sakamoto does not teach, nor can it reasonably be considered to have suggested, a dynamic adjustment of heater control, as recited in the claims. Sakamoto uses established look up tables, after manual measurement, to change temperature profiles. Such a methodology is distinct from the dynamic adjustment of the presently claimed subject matter.

For at least the foregoing reasons, Sakamoto cannot reasonably be considered to teach, or to have suggested, the combination of features positively recited in independent claims 1, 2, 12 and 13. Further, claims 3, 5 and 6 are also neither taught, nor would they have been suggested, by Sakamoto for at least the respective dependence of these claims on an allowable base claim, as well as for the separately patentable subject matter that each of these claims recites.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-3, 5, 6, 12 and 13 under 35 U.S.C. §102(b), or in the alternative, under 35 U.S.C. §103(a) are respectfully requested.

The Office Action, in paragraph 4, rejects claims 7 and 9-11, and apparently claim 8, under 35 U.S.C. §103(a) as being unpatentable over Sakamoto in view of U.S. Patent No. 5,593,608 to Suzuki. This rejection is respectfully traversed.

Suzuki teaches a furnace for processing wafers (col. 1, lines 13-22). The time lag associated with each heating zone is stored in the memory of a temperature controller (col. 3,

lines 31-42, col. 6, lines 59-67). Dummy wafers are used to establish a first temperature profile (col. 7, lines 13-18, col. 8, lines 3-17). The dummy wafers contain attached thermocouples, and thermocouple temperature data is used to establish a furnace temperature profile (col. 8, lines 54-59).

The Office Action alleges that the storage of temperature data in a memory is well known, as shown by Suzuki, and the combination with Sakamoto would have been obvious to one of ordinary skill in the art.

Suzuki employs a like method to Sakamoto to obtain a correct furnace temperature profile. A time lag, not temperature, is held in the memory of Suzuki. This memory forms a look-up table, not a dynamic adjustment as recited in the pending claims. As such, Suzuki does not overcome any shortfall in the application of Sakamoto to the subject matter of the pending independent claims as argued above.

For at least the foregoing reason, any permissible combination of Sakamoto and Suzuki would not have suggested the subject matter of at least claims 7-11, for the respective dependence of these claims on allowable base claims, as well as for the separately patentable subject matter that each of the claims recites.

Accordingly, reconsideration and withdrawal of the rejection of claims 7-11 under 35 U.S.C. §103(a) as being unpatentable over Sakamoto in view of Suzuki are respectfully requested.


The Office Action, in paragraph 5, indicates that claim 4 recites allowable subject matter. Specifically, the Office Action indicates that this claim would be allowed if rewritten in independent form including all of the features of the base claim and any intervening claims. Applicants appreciate this indication of allowability, but respectfully submit that claims 1-3 and 5-13 are allowable for at least the reasons set forth above.

Claims 14-17 recite features similar to those discussed above with regard to the other claims currently pending in this application, and are therefore allowable to at least the extent of the other pending claims in view of the discussion above.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-3 and 5-17, in addition to the indicated allowable subject matter of claim 4, are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:
Amendment Transmittal

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